In the claims:

1-127. (cancelled)

128. (previously presented) Tooling for picking up portions of foodstuff from a conveyor belt, by which in use articles can be picked up from one position and lowered into a second position, which tooling comprises:

two blades each having a leading edge and trailing edge, and both being movable between a first position in which their leading edges are separated by a large gap and a second position in which the leading edges overlap, or are in contact or are separated by a smaller gap;

a drive mechanism for effecting relative movement between the two blades for moving them between the first and second positions, whereby in use with the blades in the first position the tooling can be lowered so that the undersides of the two blades just make contact with a surface on which an article is resting with the two leading edges of the blades on opposite sides of the article and the article can be picked up by the blades by operating the drive mechanism so as to move the blades into their second position below the article; and

a movement restraining mechanism including an article engaging arrangement, whereby the engagement between the article engaging arrangement and the article will resist lateral or rotational movement of the article relative to the article engaging arrangement as a result of the blades sliding below the article, and the article engaging arrangement is in use adapted to remain stationary while the blades move relatively thereto from their first to their second positions, wherein:

the tooling is adapted to be secured to the moveable end of a computer-controlled robotic arm enabling the articles to be rotated in transit from said one position to the second position; and

the movement restraining mechanism comprises at least one resiliently deformable member located above the plane containing the two blades and spaced therefrom by a distance which is less than the thickness of each article to be picked up by the tooling, so that in use as the tooling is lowered onto an article, the underside of the deformable member engages the upper surface of the article and becomes deformed in order to accommodate the thickness of the article before the blades make contact with a surface on which the article rests, the resulting downward force on the article, and frictional resistance to movement between the deformable member and

the article, serving to restrain the article from moving under the influence of subsequent blade movement therebelow, either to pick up or to release the article.

129. (previously presented) Tooling as claimed in claim 128 wherein each of the trailing edges of the blades includes an upstanding lip or ridge or wall which in use will engage opposite edge regions of the article when the blades occupy their second position.

130. (previously presented)Tooling as claimed in claim 128, wherein the movement restraining mechanism comprises at least one spike which points generally perpendicularly towards a plane containing the two blades so that as the tooling is lowered onto an article the spike penetrates the article before the blades make contact with a surface on which the article rests, and wherein the movement restraining device further comprises ejector means which acts to push an article off the spike, as the blades move towards their second open position, so as in use to prevent an article remaining impaled on the spike, after the blades are opened to release the article.

131. (previously presented)Tooling as claimed in claim 128, wherein the movement restraining mechanism comprises at least one spike which points generally perpendicularly towards a plane containing the two blades so that as the tooling is lowered onto an article the spike penetrates the article before the blades make contact with a surface on which the article rests, and wherein the movement restraining device further comprises ejector means which acts to push an article off the spike, as the blades move towards their second open position, so as in use to prevent an article remaining impaled on the spike, after the blades are opened to release the article, and wherein the ejector means comprises at least one pin which is withdrawn upwardly as the blades move into their first, closed position but is moved downwardly into a protruding position as the blades move into their second, open position, so as to push an article in a similar downward direction, off the spike.

132. (previously presented)Tooling as claimed in claim 128, wherein the deformable member comprises a block of resiliently deformable material, a sprung plate or block, or a dished plate of spring steel or the like.

133. (previously presented) Tooling as claimed in claim 128, wherein the deformable member comprises at least one metal spring finger, having lateral stiffness but being adapted to deflect resiliently in an upward direction, relative to the blades.

134. (previously presented) Tooling as claimed in claim 128, wherein the deformable member comprises at least one metal spring finger which is bent so as to point downwardly to engage the upper surface of the article, but which can be more or less flattened by an upward force, so as to accommodate the thickness of the article.

135. (previously presented)Tooling as claimed in claim 128, wherein the movement restraining mechanism comprises a vacuum chuck which is adapted to become vacuum clamped to the upper surface of the article as the tooling moves downwardly onto the article, the vacuum clamping serving to resist movement of the article as the blades subsequently slide therebelow either to pick up or release the article.

136. (previously presented) Tooling as claimed in claim 128, wherein in use rotation of an article in transit between the first and second positions is achieved by rotating one part of the robotic arm relative to another part thereof, or by rotating the tooling relative to the robotic arm.

137. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article.

138. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein the drive mechanism only operates to disengage the support members from the article after the blades have moved from below the article.

139. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein the drive mechanism for the support members includes a lost motion connection in combination with a low spring rate compression spring which is compressed to the extent of an overrun created by the lost motion connection, and provides the lateral gripping force on the article when the support members are moved into article engagement, and also ensures that the lost motion is accommodated as the drive retracts.

140. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein a first double acting pneumatic cylinder is adapted to move the blades and support members as a single unit, and a second double acting pneumatic cylinder is adapted to move the blades relative to the support members.

141. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein each support member is in sliding contact with the upper surface of the blade with which it is associated, so that the relative movement during closure on product and/or during opening to release the product, acts in a self-cleaning manner in that the support member scrapes clean the upper surface of the blade.

142. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein, after movement of the article to the said second position, the drive mechanism is operated to retract the blades so as to align with the inner faces of the support members,

and thereafter the drive mechanism is operated to retract both blades and support members in synchronism, by a distance just sufficient to release the article, so that the position of

the article relative to the support surface remains substantially undisturbed from that determined by the position to which the tool has been moved.

143. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein, after movement of the article to the said second position, the drive mechanism is operated to retract the blades so as to align with the inner faces of the support members,

and thereafter the drive mechanism is operated to retract both blades and support members in synchronism, by a distance just sufficient to release the article, so that the position of the article relative to the support surface remains substantially undisturbed from that determined by the position to which the tooling has been moved,

and wherein the tooling is raised vertically clear of the article while the support members continue to locate the article in position until the tooling has been raised clear thereof, after which the drive mechanism is operated to fully retract the support members and the blades.

144. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein, after movement of the article to the said second position, the drive mechanism is operated to retract the blades so as to align with the inner faces of the support members,

and thereafter the drive mechanism is operated to retract both blades and support members in synchronism, by a distance just sufficient to release the article, so that the position of the article relative to the support surface remains substantially undisturbed from that determined by the position to which the tooling has been moved,

and wherein the tooling is raised vertically clear of the article while the support members continue to locate the article in position until the tooling has been raised clear thereof, after which the drive mechanism is operated to fully retract the support members and the blades and wherein the step of fully retracting the support members and blades is effected in transit as the tooling returns to pick up another article.

145. (previously presented)Tooling as claimed in claim 128, wherein the restraining means comprises an array of spaced apart displaceable elongate rod-like fingers which are mounted so as to extend generally normal to the plane containing the two blades, so that in use as the tool is lowered over an article with the blades retracted the lower ends of some of the fingers will engage the upper surface of the article and as a consequence will be pushed upwardly as the tool continues to move downwardly over and around the article, but other of the fingers which do not register with the article will not be pushed upwardly but will remain extended and will surround the article and in use will provide lateral support therefor as the blades subsequently move relative to the underside of the article both inwardly and outwardly.

146. (previously presented) Tooling as claimed in claim 128, wherein the mechanism by which the two blades and/or support members (if provided) are caused to move exerts negligible torque about the torsion drive axis of the robotic arm and/or about the rotational axis between the arm and the tooling and/or about any axis about which one part of the arm can rotate relative to another part thereof.

147. (previously presented) Tooling as claimed in claim 128, wherein the drive mechanism acts equally and oppositely on the two blades.

148. (previously presented) Tooling as claimed in claim 128, wherein:

a support member is positioned above each of the blades; and

a drive mechanism is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article,

the drive mechanism maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article,

and wherein the drive mechanism acts equally and oppositely on the two support members.

149. (previously presented)Tooling as claimed in claim 128, wherein the drive means acts on one of the blades and a connection between the two blades transmits drive to the other blade so as to cause each to move in an appropriate manner.

150. (previously presented)Tooling as claimed in claim 128, wherein a support member is positioned above each of the blades, and drive means is provided for moving each support member and each of the blades which in use operates to move both the support members and the blades until an article is gripped between the support members, and thereafter to move only the blades below the article, the drive means maintaining the support members in the article gripping position as the blades are subsequently withdrawn from below the article to prevent frictional drag on the underside of the latter from separating or moving the article, wherein the drive means acts on one of the support members and a connection is provided between the two support members to transmit drive to the other support member so as to cause each support member to move in an appropriate manner.

151. (previously presented) Tooling as claimed in claim 128, wherein the robotic arm includes a rotational drive, for rotating tooling attached thereto relative to the arm, whereby in use this is employed for orientating the tooling and therefore an article therein, during transit.

152. (previously presented) Tooling as claimed in claim 128, wherein:

in use, just prior to their inward sliding movement below an article, the blades are pressed into contact with the flat support surface on which the article is carried; and

a resilient lost motion connection is provided between the blades and the robotic arm, which permits the blades to make contact with the article support surface shortly before the downward movement of the end of the robotic arm carrying the tooling is stopped, and

during the final movement of the robotic arm in which the resilient lost motion connection is compressed after the blades make contact with the said surface, the energy stored in the compression of the resilient lost motion connection serves to exert a downward force on the blades which is resisted by the said surface, thereby to keep the blades in sliding contact therewith as they move towards and slide under the article, to enable the blades to close to their second position.

153. (previously presented) Tooling as claimed in claim 128, wherein:

in use, just prior to their inward sliding movement below an article, the blades are pressed into contact with the flat support surface on which the article is carried; and

a resilient lost motion connection is provided between the blades and the robotic arm, which permits the blades to make contact with the article support surface shortly before the downward movement of the end of the robotic arm carrying the tooling is stopped, and

during the final movement of the robotic arm in which the resilient lost motion connection is compressed after the blades make contact with the said surface, the energy stored in the compression of the resilient lost motion connection serves to exert a downward force on the blades which is resisted by the said surface, thereby to keep the blades in sliding contact therewith as they move towards and slide under the article, to enable the blades to close to their second position, and

wherein the lost motion connection is between the robotic arm and the tooling.

154. (previously presented) Tooling as claimed in claim 128, wherein:

in use, just prior to their inward sliding movement below an article, the blades are pressed into contact with the flat support surface on which the article is carried; and

a resilient lost motion connection is provided between the blades and the robotic arm, which permits the blades to make contact with the article support surface shortly before the downward movement of the end of the robotic arm carrying the tooling is stopped, and

during the final movement of the robotic arm in which the resilient lost motion connection is compressed after the blades make contact with the said surface, the energy stored in the compression of the resilient lost motion connection serves to exert a downward force on the blades which is resisted by the said surface, thereby to keep the blades in sliding contact therewith as they move towards and slide under the article, to enable the blades to close to their second position,

and wherein the drive mechanism is torsionally stiff in a plane parallel to that in which the blades move but is capable of flexing or distorting or rising and falling as by pivoting in a plane which is perpendicular to the plane in which the blades move, so as to accommodate the lost motion between the blades and the bridge.

155. (previously presented) Tooling as claimed in claim 128, wherein the blades and support members rotate relative to one another or slide linearly relative to each other.

156. (previously presented) Tooling as claimed in claim 128, in which the blades and support members are carried below a bridge, and the gap between the bridge and the blades is adjustable to allow different heights of article to be accommodated within the tooling.

157. (previously presented) Tooling as claimed claim 128, wherein the article comprises two or more foodstuff portions, in a shingled array on the conveyor, and the tooling picks and places the shingled array without disturbing the relationship of the shingled portions.

158. (previously presented) Tooling as claimed claim 128, wherein:

the article comprises two or more foodstuff portions, in a shingled array on the conveyor, and the tooling picks and places the shingled array without disturbing the relationship of the shingled portions and wherein

the tooling is orientated relative to the shingled array so that the two blades (and if provided the support members) advance towards the array along a line which is generally orthogonal to the direction in which the portions are shingled.

159. (previously presented) Tooling as claimed in claim 128, in combination with a viewing system which provides image signals to a robotic-arm-controlling computer, wherein:

the computer is programmed to determine the orientation of each article to be picked up, and to generate control signals for rotating the tooling accordingly.

160. (currently amended) A product handling system comprising:

a first conveyor;

a second conveyor spaced from the first;

a robotic arm and computer control therefor, and having tooling as claimed in claim [[91]] 128 attached to its remote movable end,

both arm and tooling being controllable by signals from the computer control to position the tooling around an article on one conveyor,

to slide the blades thereof below the article,

and thereafter lift the article from the one conveyor by appropriately controlling the robotic arm,

to move the arm and therefore the article-containing tooling so as to position it over the other conveyor,

and thereafter to open the blades and deposit the article on the other conveyor.

161. (currently amended) A product handling system comprising:

a first conveyor;

a second conveyor spaced from the first;

a robotic arm and computer control therefor, and having tooling as claimed in claim [[91]] 128 attached to its remote movable end,

both arm and tooling being controllable by signals from the computer control to position the tooling around an article on one conveyor,

to slide the blades thereof below the article,

and thereafter lift the article from the one conveyor by appropriately controlling the robotic arm,

to move the arm and therefore the article-containing tooling so as to position it over the other conveyor,

and thereafter to open the blades and deposit the article on the other conveyor, wherein the system includes a camera and sensor which produce signals which are supplied to the computer,

the computer is programmed to determine therefrom the position and/or orientation and/or nature of each article on the said one conveyor, and to generate control signals to cause drives to operate to lift and/or rotate and/or lower the tooling and/or adjust the robotic arm so that the tooling is positioned at just the right time relative to an article travelling on the one conveyor to enable the tooling to pick it up therefrom,

and if required to rotate it in transit,

and thereafter position it on the other conveyor at precisely the right point in time and in the correct orientation,

and wherein said other conveyor has trays or other containers thereon,

the camera system and sensor are set up so as to enable the computer to identify the precise position of each tray or container relative to the robotic arm,

and the computer is programmed to control the movement of the said other conveyor as well as the said one conveyor, to ensure that a specific tray or container is at a specific position at a specific time to allow a specific article picked from the one conveyor to be placed in the said tray or container by the tooling carried by the robotic arm.

162. (previously presented) A method for picking up a portion of foodstuff from a conveyor belt from one position and lowering it into a second position with tooling,

the tooling being adapted to be secured to the moveable end of a computer-controlled robotic arm enabling an article to be rotated in transit from said one position to the second position,

which tooling comprises:

two blades each having a leading edge and a trailing edge, with both being moveable between a first position in which their leading edges are separated by a large gap and a second position in which the leading edges overlap, or are in contact or are separated by a smaller gap;

a drive mechanism for effecting relative movement between the two blades for moving them between the first and second positions; and

a movement restraining mechanism including an article engaging arrangement,

the movement restraining mechanism comprising at least one resiliently deformable member located above the plane containing the two blades,

the method comprising the steps of:

lowering the tooling with the blades in the first position so that the undersides of the two blades just make contact with the surface on which an article is resting with the two leading edges of the blades on opposite sides of the article, the deformable member being spaced above the plane containing the two blades by a distance less than the thickness of the article to be picked up by the tooling, so that as the tooling is lowered, the underside of the deformable member engages the upper surface of the article and becomes deformed in order to accommodate the thickness of the article before the blades make contact with the surface on which the article rests, the resulting downward force on the article, and frictional resistance to movement between the deformable member and the article serving to restrain the article from moving under the influence of subsequent blade movement therebelow, either to pick up or to release the article, the engagement between the article engaging arrangement and the article resisting lateral or rotational movement of the article relative to the article engaging arrangement as a result of the blades sliding below the article; and

operating the drive mechanism so as to move the blades into their second position below the article so that the article can be picked up by the blades, the article engaging arrangement remaining stationary while the blades move relatively thereto from their first to their second positions.